In-Class Exercise: Derive Taylor’s rule:

STUDENT NAME:

December 28, 2015

In the chapter Mathematics Recapitulation, we derive Taylor’s rule. At some point in the derivation, we make a rather large leap, it is your job to fill in how the top equation became the bottom equation.

\[ f(a + h) \approx f(a) + \int_{a}^{a+h} \left[ f'(a) + (x - a)f''(a) \right] dx \] (1)

Since \( f(a) \) and its derivatives are constant values, we can integrate this equation with respect to \( x \) leading to:

\[ f(a + h) \approx f(a) + hf'(a) + \frac{h^2}{2} f''(a) \] (2)

Show that this is indeed correct, you can write it out in your handout, rip out the page and hand it in.